



FIRE STATION LOCATION STUDY

Prepared for

Concord Fire Department, New Hampshire

January 10, 2022

Presented by

Stuart McCutcheon and Mary-Ellen Harper



Emergency Services Consulting International

Project Understanding

- Fire Station Location Study - Purpose
 - Evaluation of current conditions.
 - Identify future trends for growth, development, and service demand.
 - Provide recommendations to enhance current and future services.



Three Basic Questions

- Where are we now?

Current LOS

- Where should we be?
- How do we get there in a sustainable manner?

**Future Service Delivery
Options**



Community Overview

- Located in Merrimack County, New Hampshire
- 64 square miles

KEY FACTS

43,885 *

Population

41.2

Median Age

18,093

Households

\$53,147

Median Disposable Income

*2022 Population Estimate

EDUCATION

7%

No High School Diploma



26%

High School Graduate



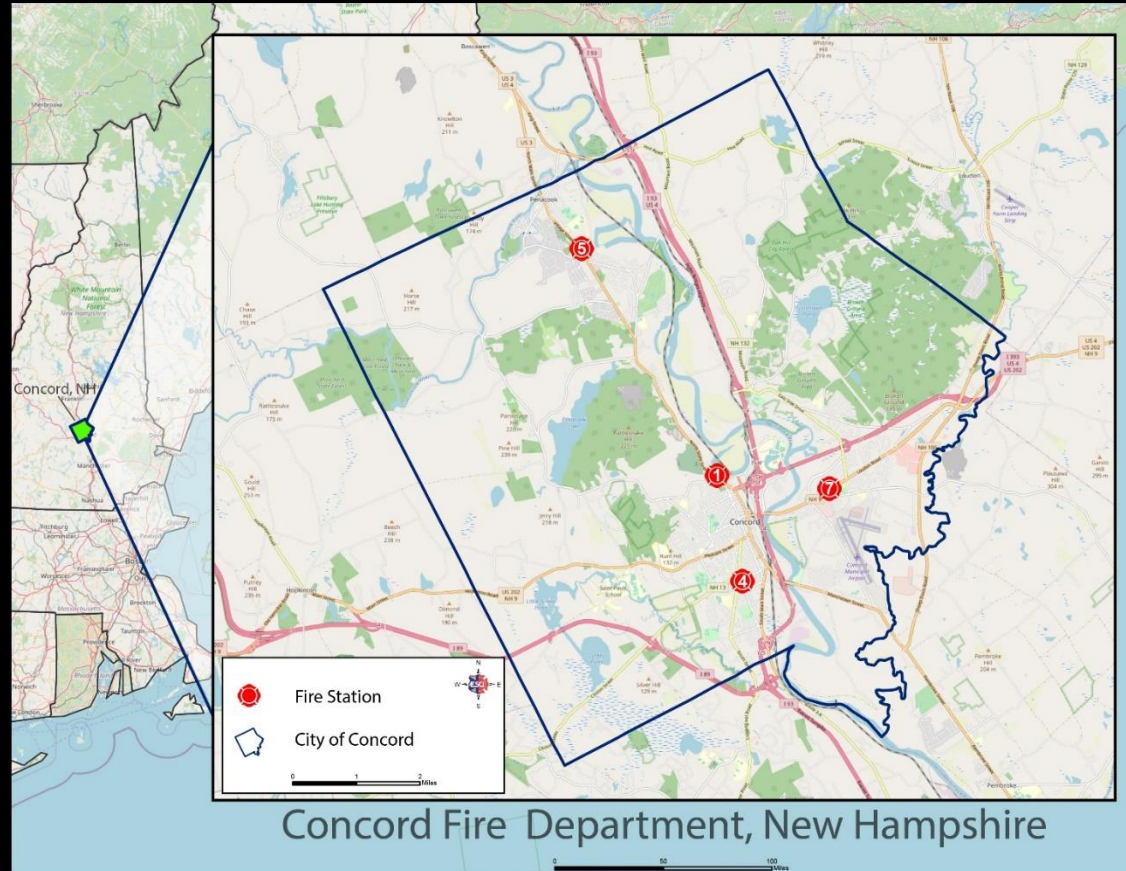
28%

Some College



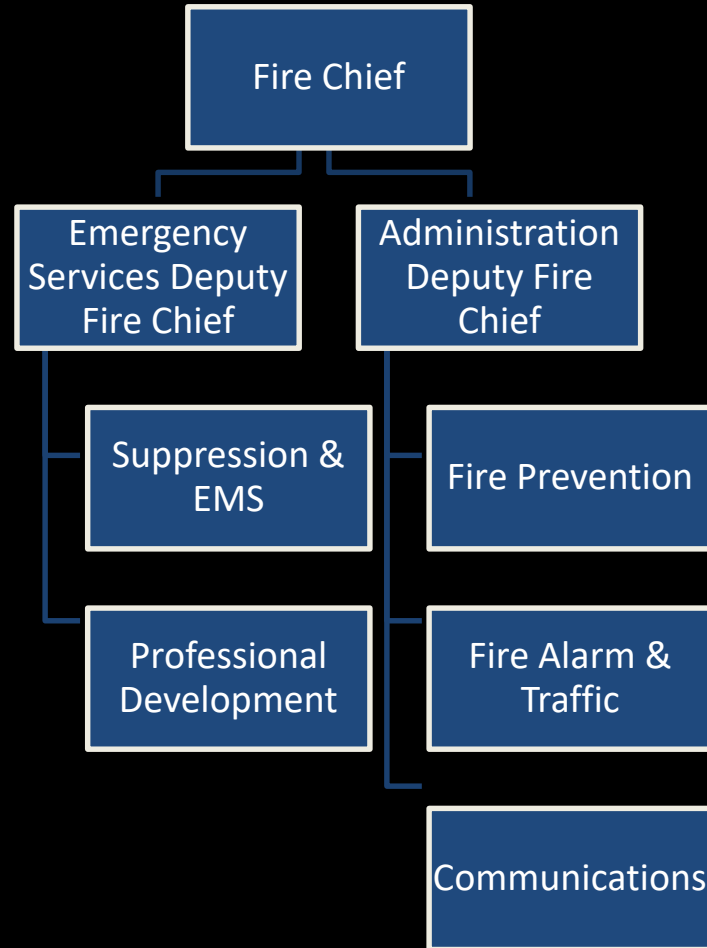
39%

Bachelor's/Grad /Prof Degree



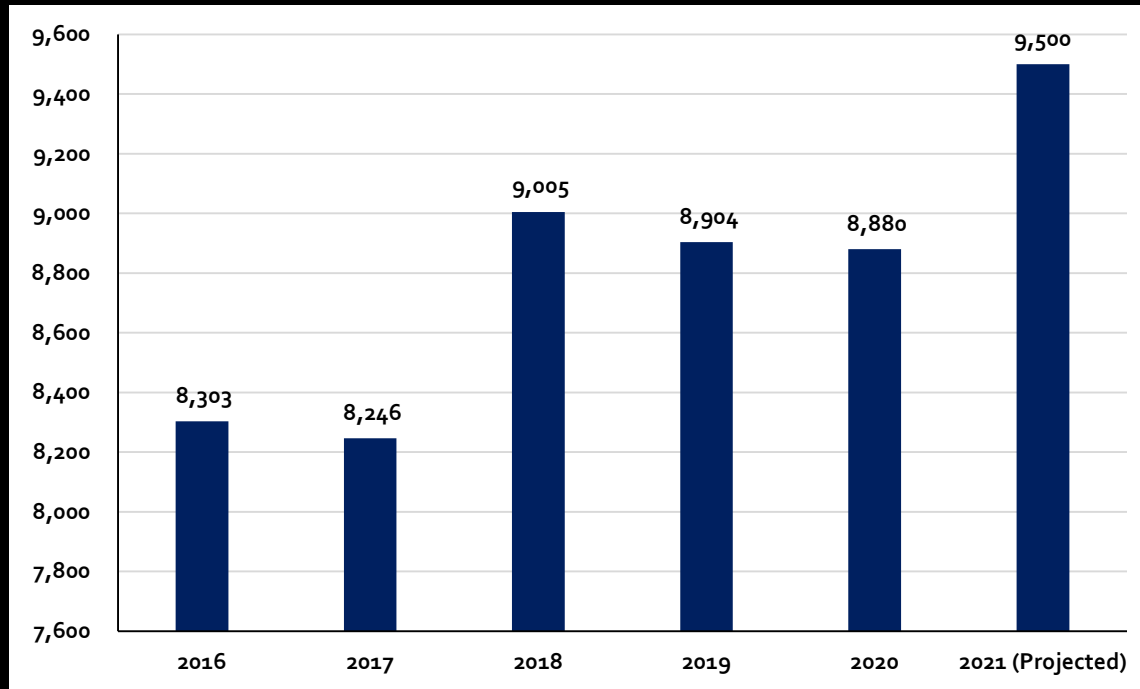
Emergency Services Consulting International

Department Overview



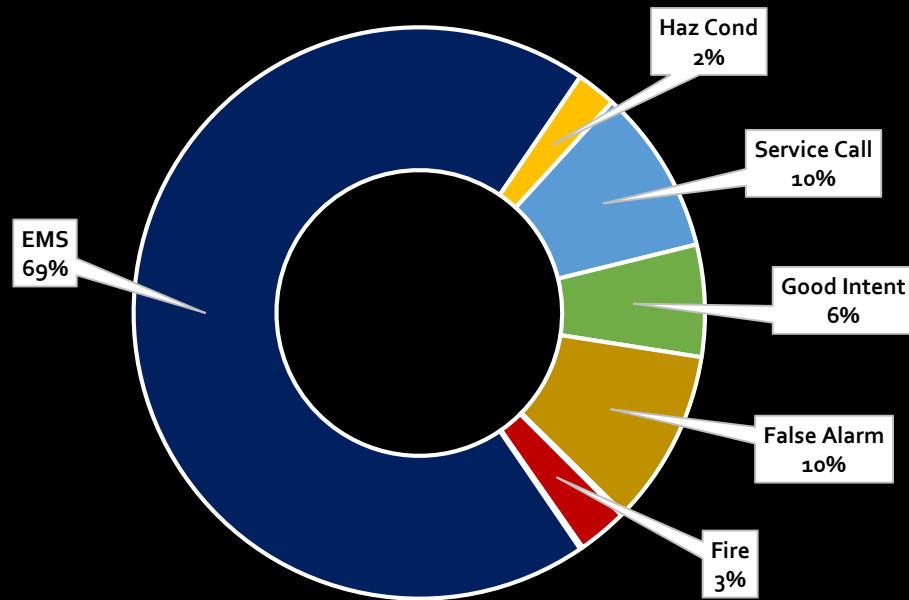
Service Delivery Overview

- Demand for Services



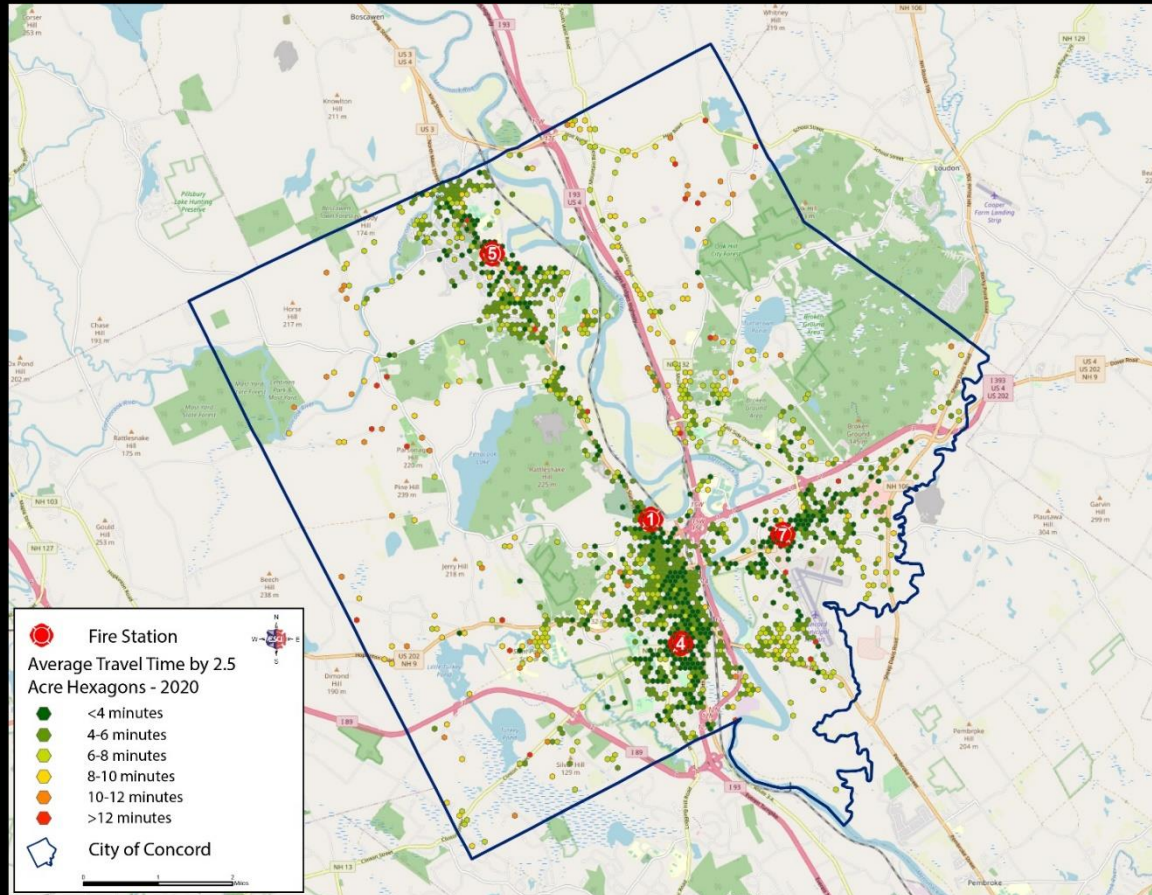
Service Delivery Overview

- Demand for Services



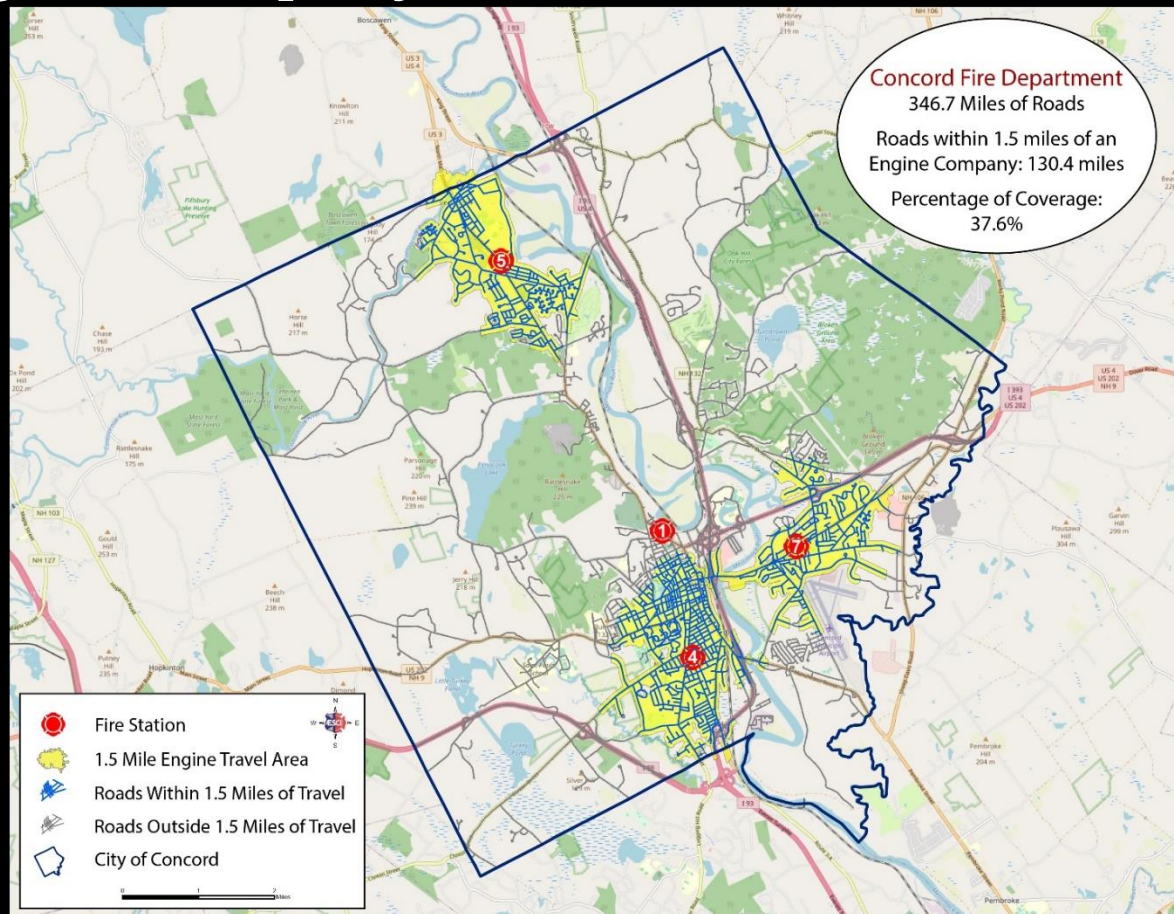
Service Delivery Overview

- Average Travel Time by 2.5-acre Hexagons



Service Delivery Overview

- ISO Engine Company Performance



Service Delivery Overview

- Response Reliability

Call Concurrency 2020

Call Concurrency	
Single Incident	46.8%
2	33.2%
3	14.0%
4	4.5%
5 or more	1.5%

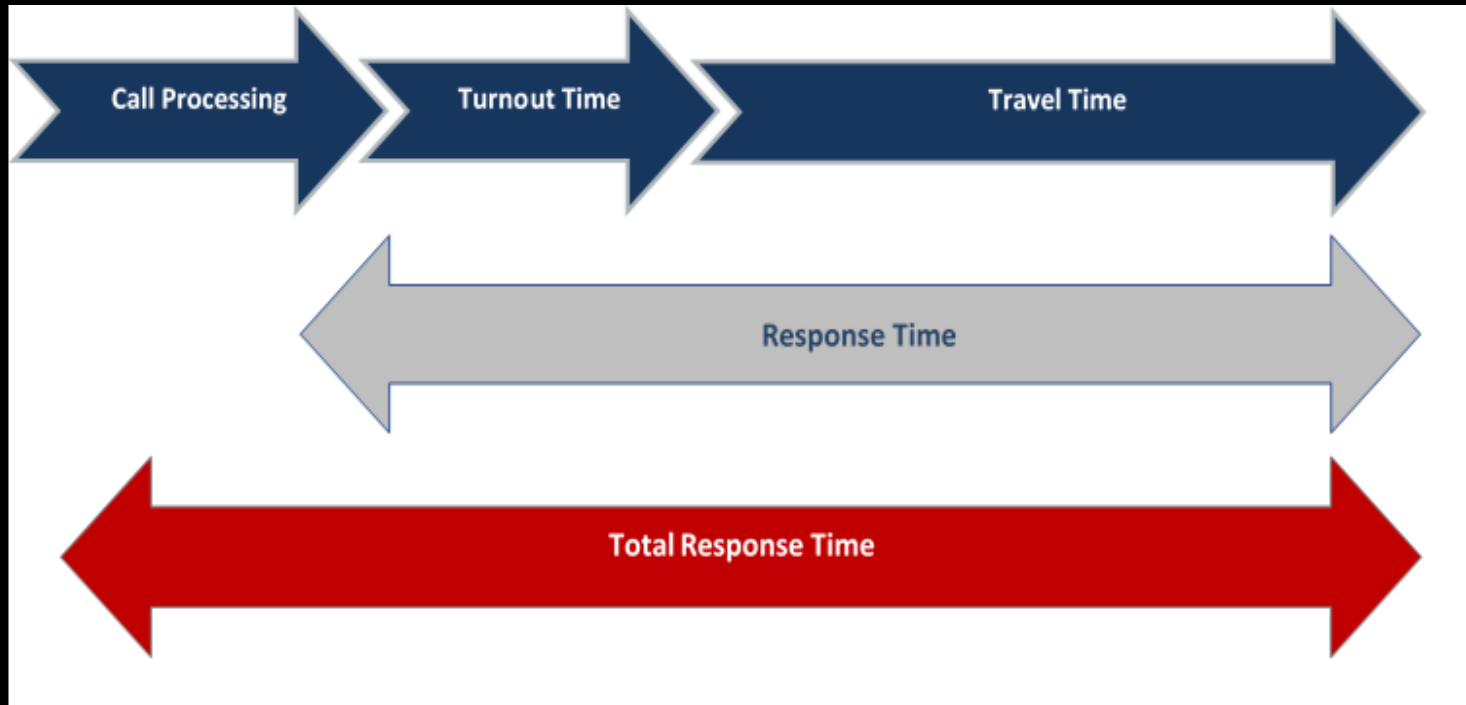
Unit Hour Utilization 2020

Unit	Number of Calls	Sum	UHU
AM4	3301	1692:51:53	19.3%
AM5	1698	1097:01:37	12.5%
AM7	2785	1529:44:29	17.5%
CR4	1135	445:31:37	5.1%
EN4	2913	888:06:49	10.1%
EN5	1481	581:50:34	6.6%
EN7	2548	844:26:20	9.6%
TW1	2391	781:45:56	8.9%



Service Delivery Overview

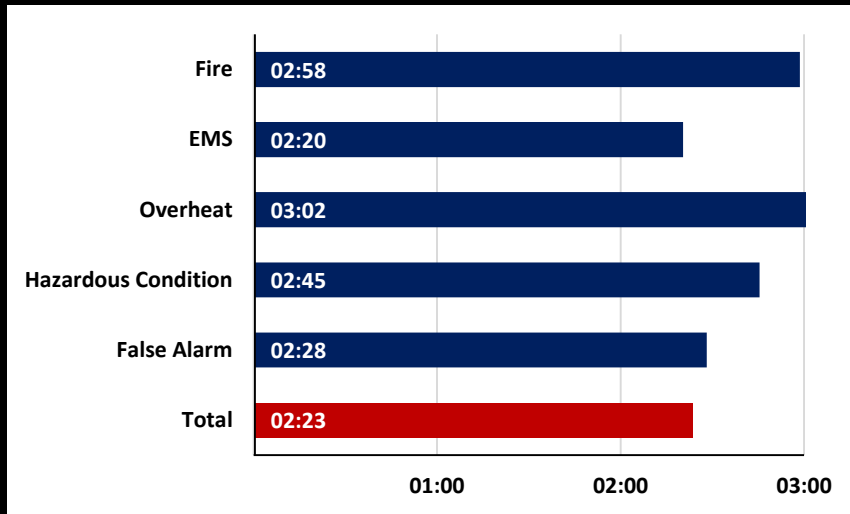
- Performance Summary



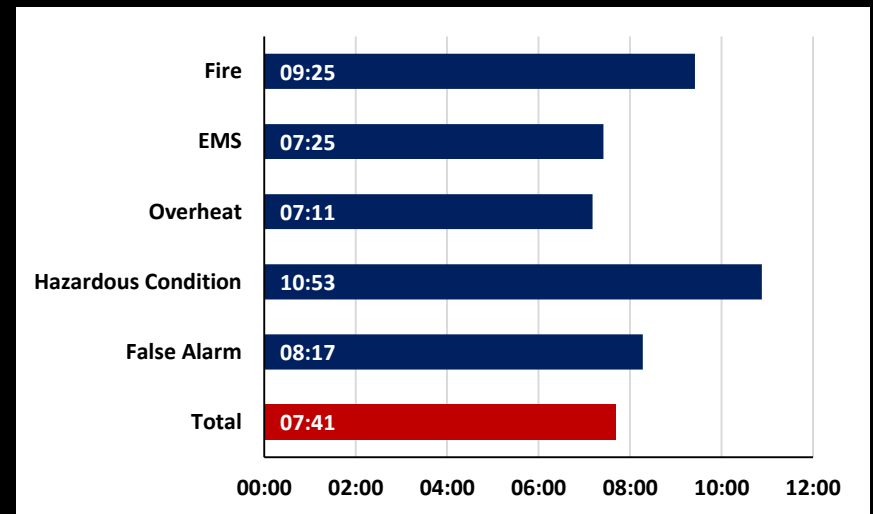
Service Delivery Overview

- Performance Summary

Turnout @ 90th Percentile



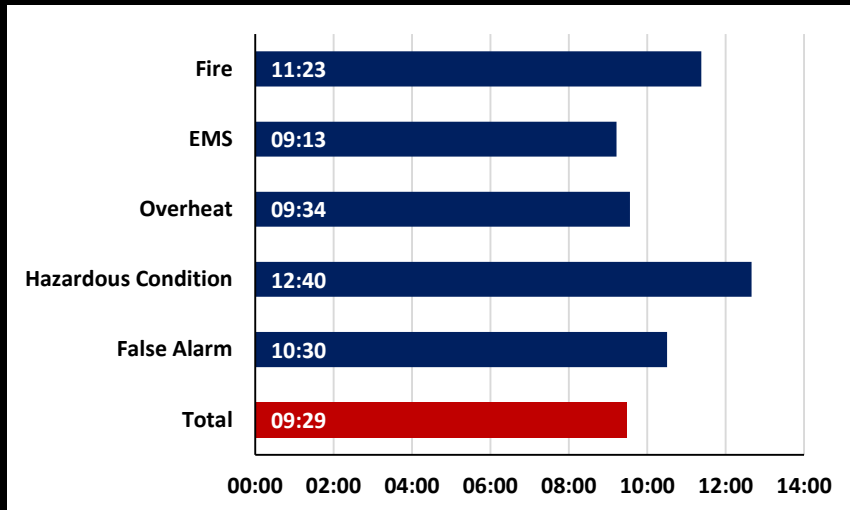
Travel @ 90th Percentile



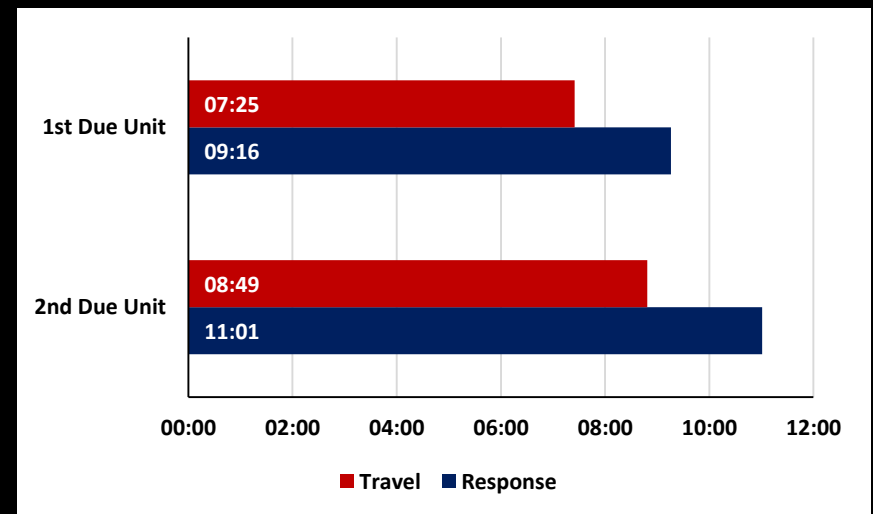
Service Delivery Overview

- Performance Summary

Response @ 90th Percentile



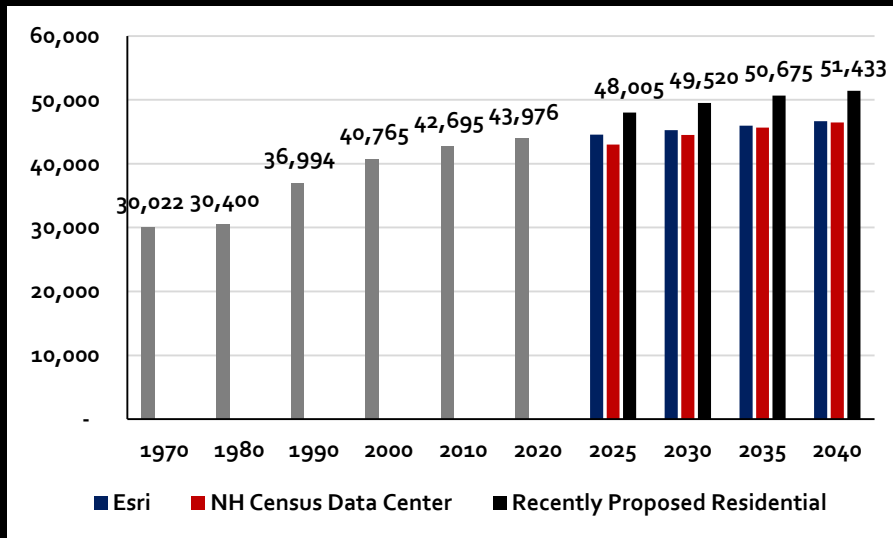
1st Due vs 2nd Due @ 90th Percentile



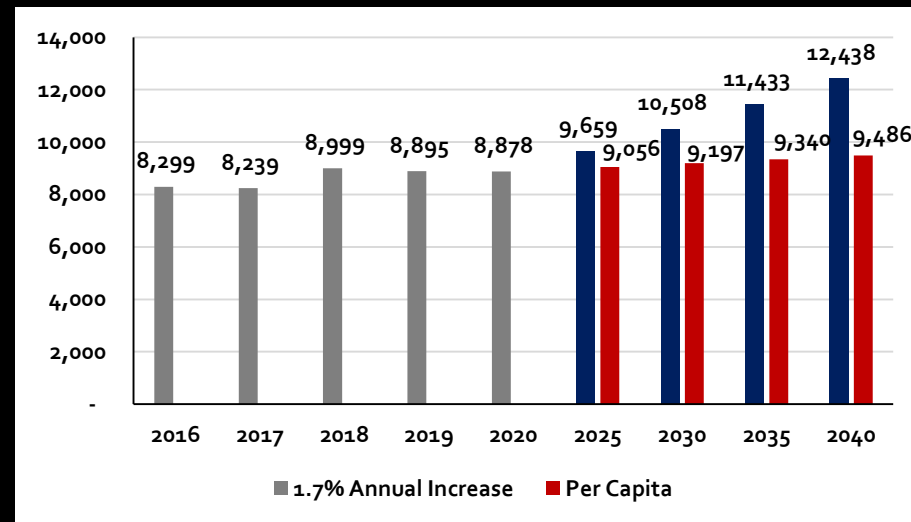
Future Projections Overview

- Growth and Demand Projections

Growth Projections



Service Demand Projections

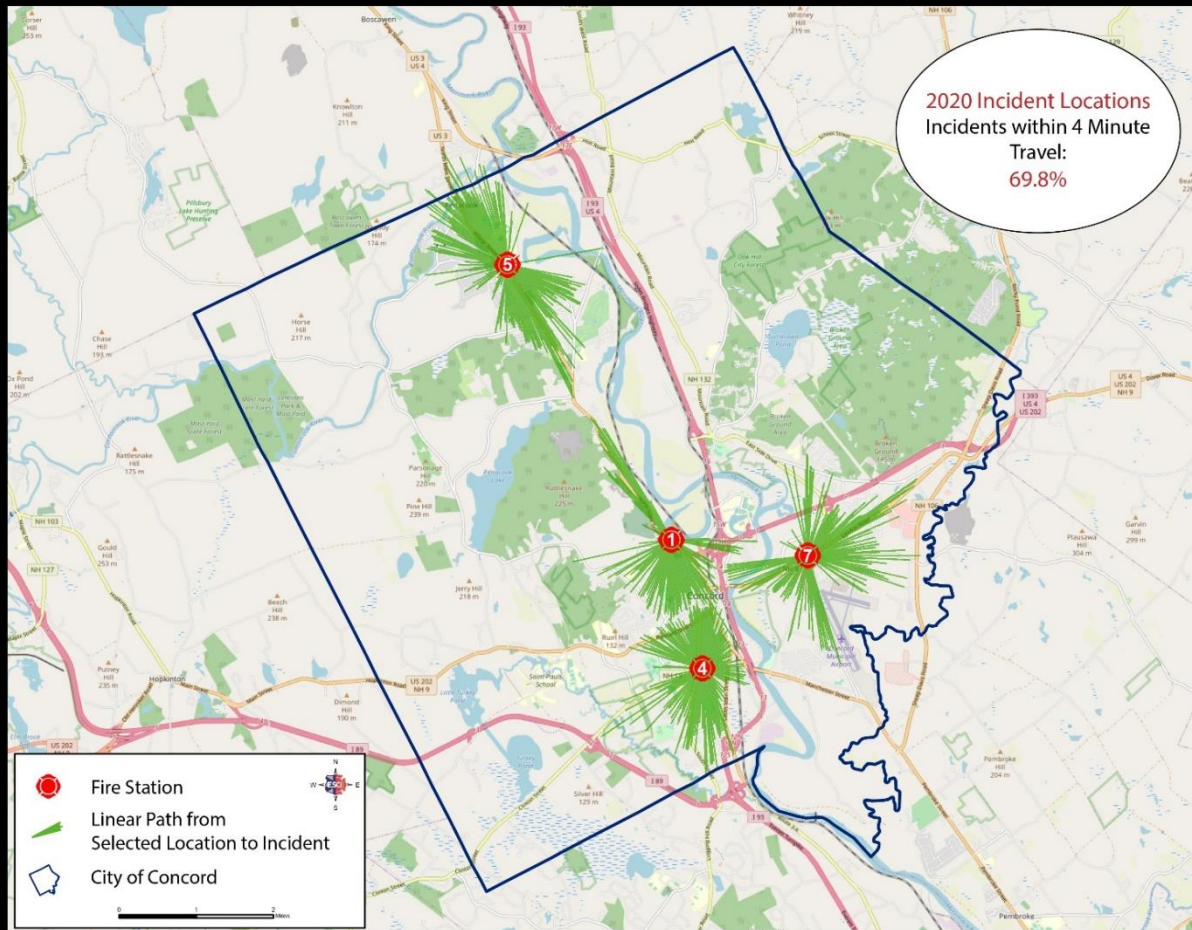


Station Location Analysis



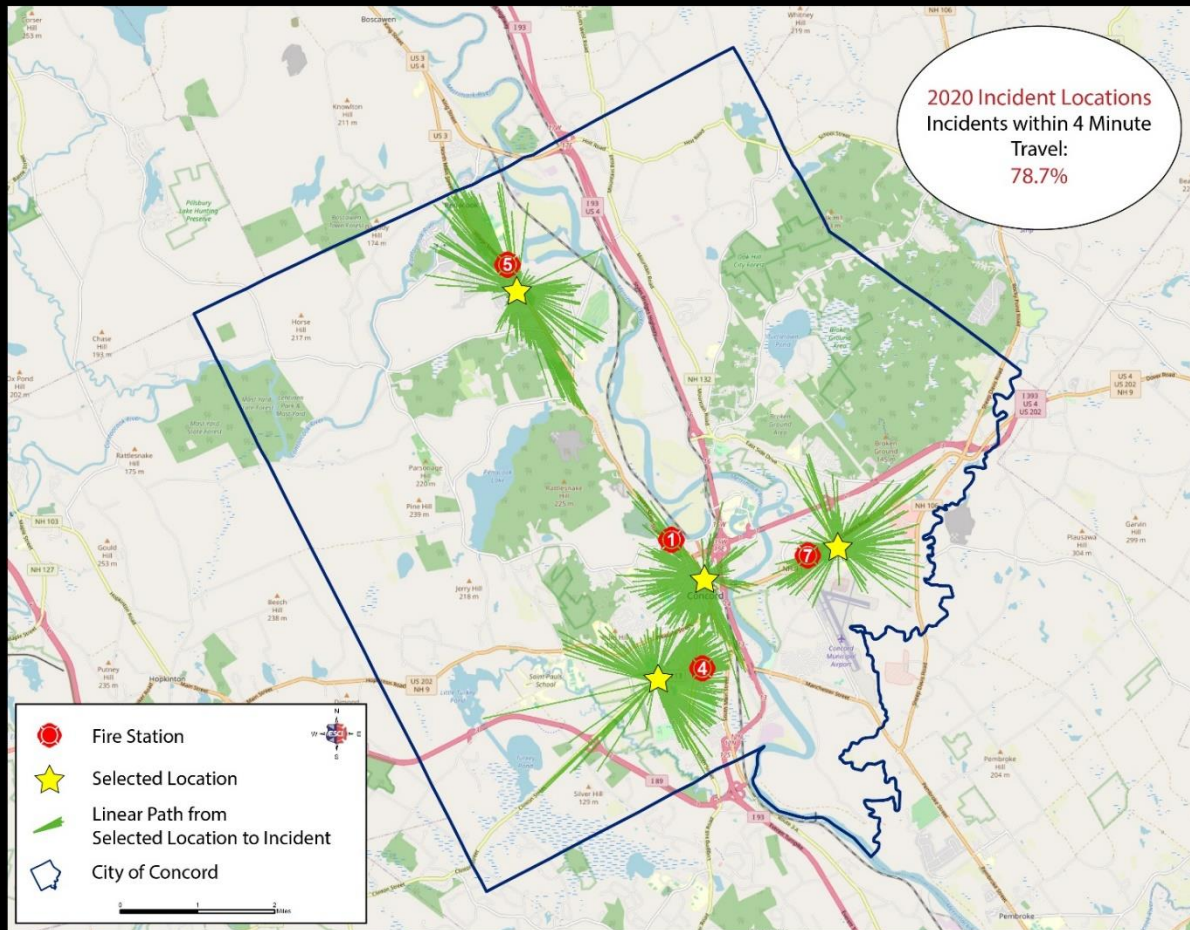
Station Location Analysis

- Baseline Performance



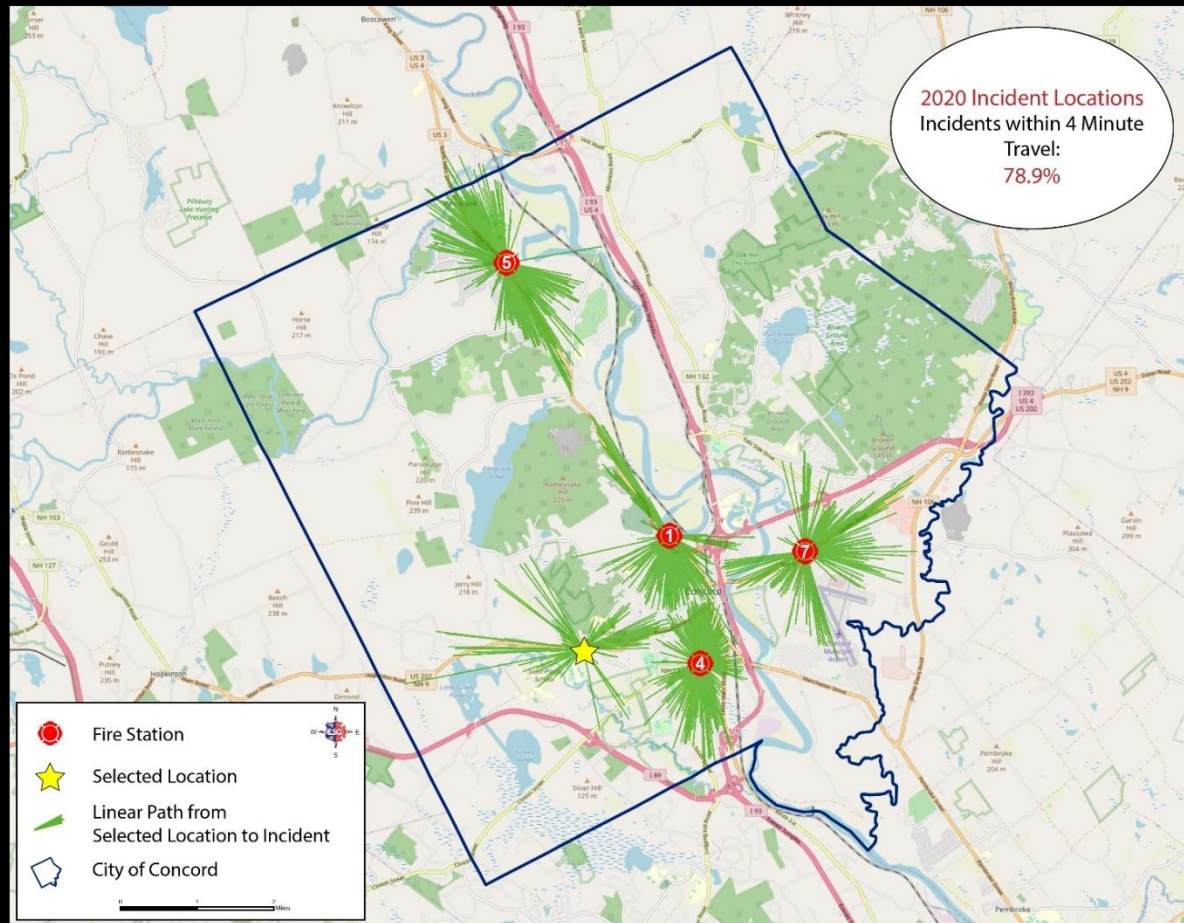
Station Location Analysis

- Optimized Performance – 4 Stations



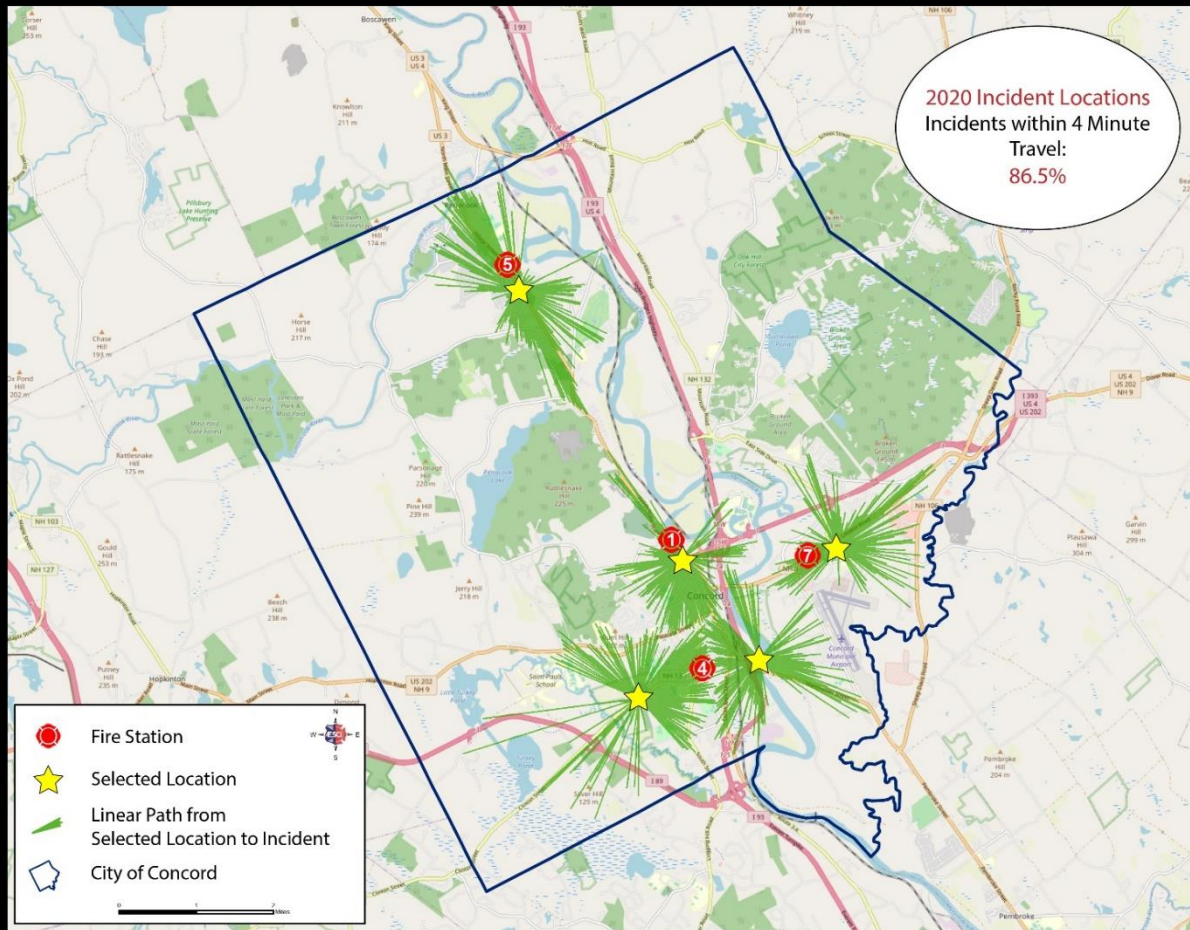
Station Location Analysis

- Add Additional Station to Current Model



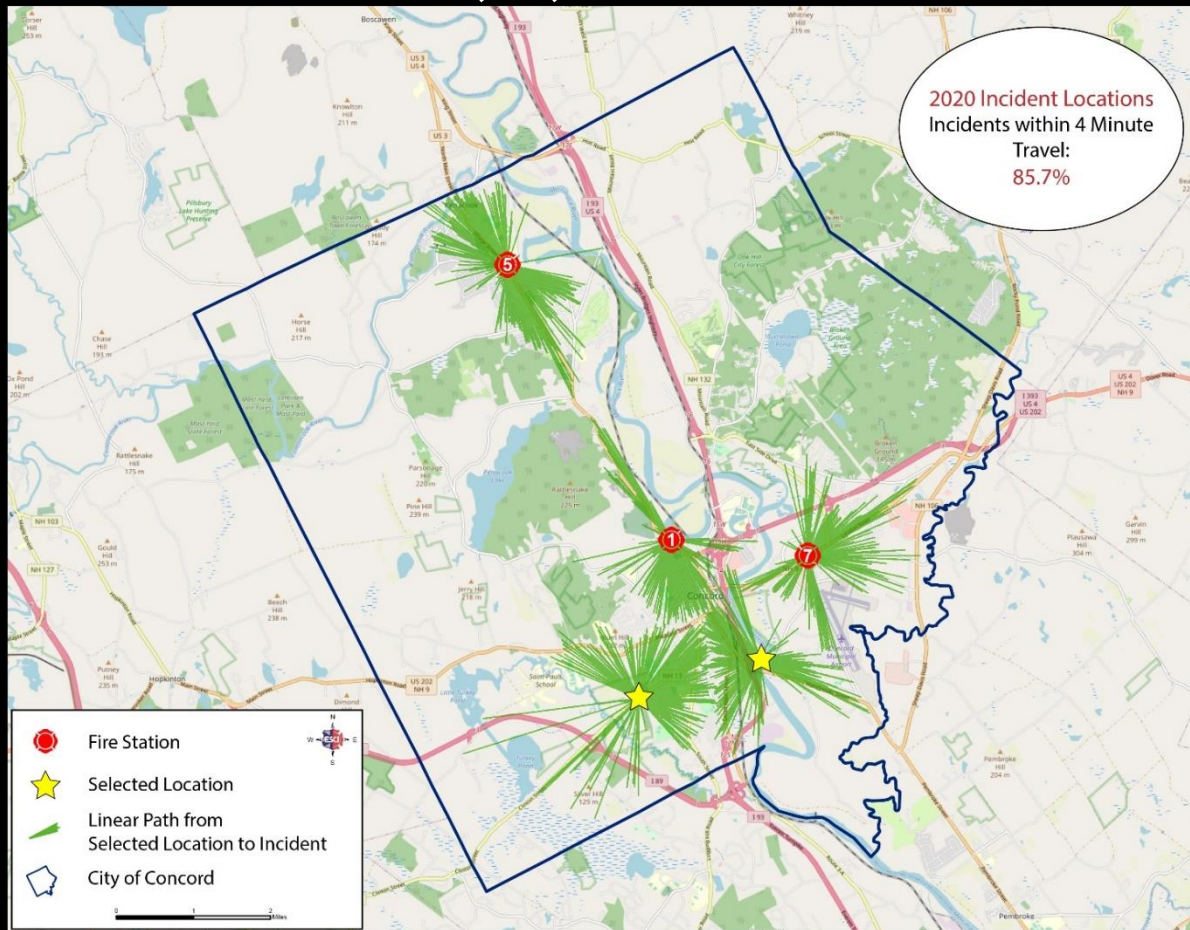
Station Location Analysis

- Optimized Performance - 5 Stations



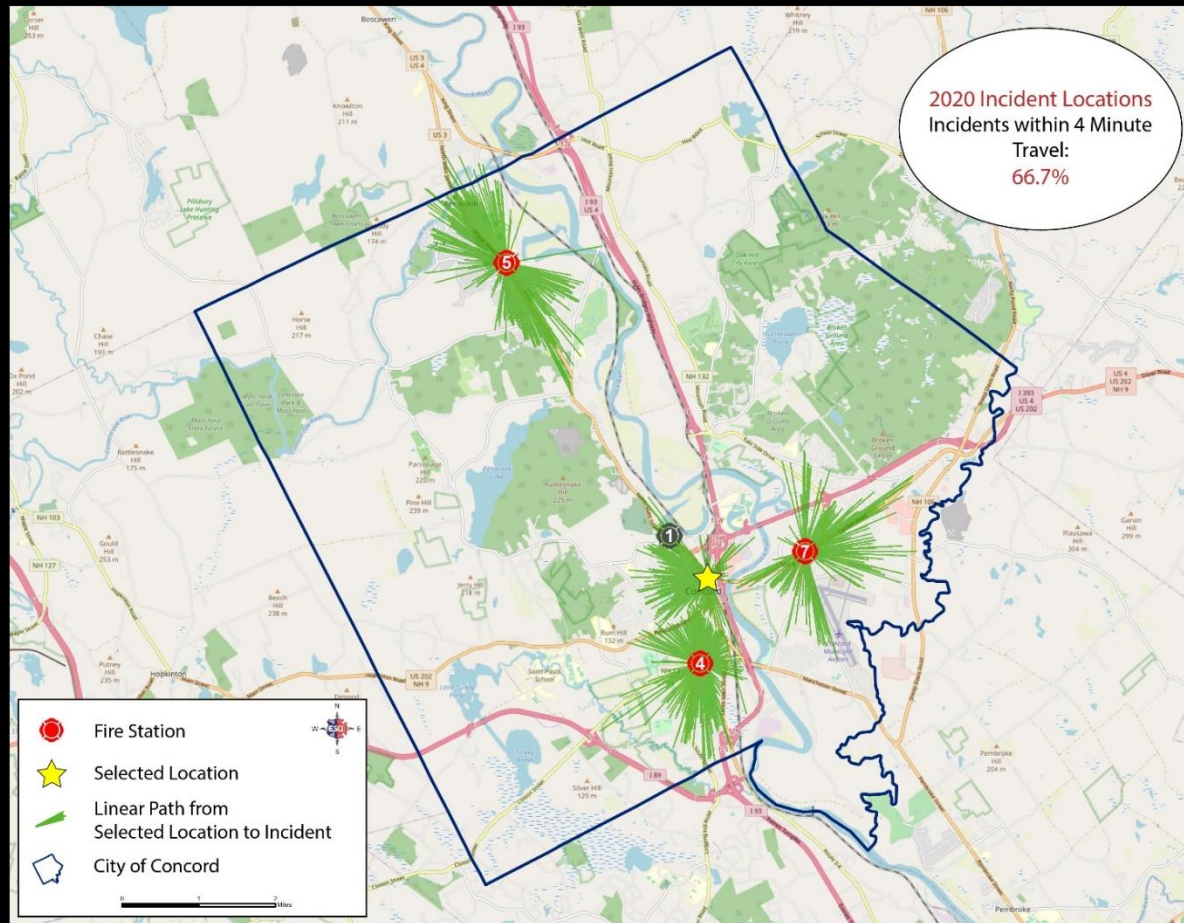
Station Location Analysis

- 5 Stations – Stations 1, 5, and 7 Remain



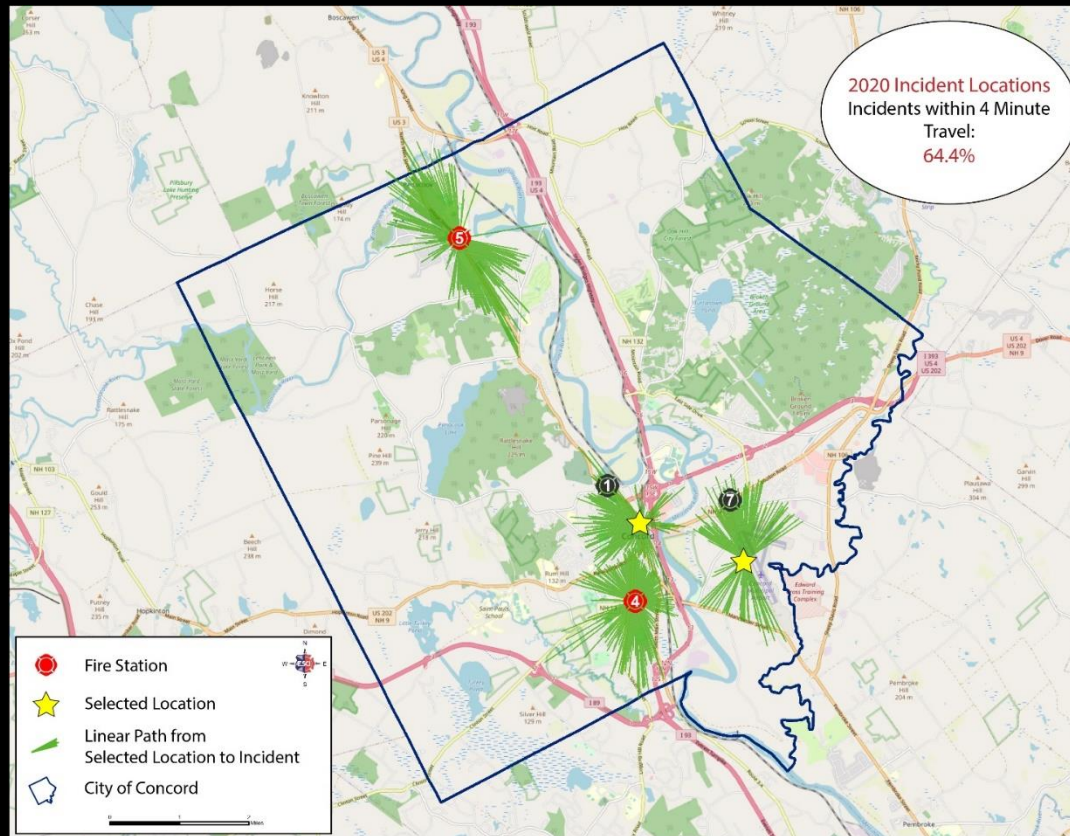
Station Location Analysis

- **4 Stations – Station 1 Relocated to Storrs Street**



Station Location Analysis

- 4 Stations – Station 1 Relocated to Storrs Street, Station 7 Relocated to Regional Drive



Summary of Decision Points and Options



Summary of Decision Points and Options

- How many fire stations does the City of Concord plan to operate during the next 30-50 years?
- 4 Stations
 - **Option A:** Continue to operate 4 fire stations in their existing locations.
 - Impact: No change to current deployment with all facilities requiring rehabilitation/ reconstruction at current locations.
 - % Demand within 4-minute Travel: 69.8%
 - Net Improvement: No Change



Summary of Decision Points and Options

- How many fire stations does the City of Concord plan to operate during the next 30-50 years?
- 4 Stations
 - **Option B:** Optimize the locations of all 4 fire stations.
 - Impact: Projected improvement to current service delivery performance. Higher costs associated with land acquisition. Similar benefit can be achieved by adding 5th station to current configuration with rehabilitation/ reconstruction required at current locations.
 - % Demand within 4-minute Travel: 78.7%
 - Net Improvement: 8.9%
 - *Note: Optimizing the locations of between 1 and 3 stations will also result in a net improvement; however, it will be less of an improvement.



Summary of Decision Points and Options

- How many fire stations does the City of Concord plan to operate during the next 30-50 years?
- 5 Stations
 - **Option A:** Add a 5th fire station in the area west of Langley Parkway and Pleasant Street and maintain the locations of the existing 4 fire stations.
 - Impact: Lower capital costs than acquiring new land and relocating current four stations. Increased personnel costs for additional facility. Improvement to resiliency and effective response force with rehabilitation/ reconstruction required at current locations.
 - % Demand within 4-minute Travel: 78.9%
 - Net Improvement: 9.1%



Summary of Decision Points and Options

- How many fire stations does the City of Concord plan to operate during the next 30-50 years?
- 5 Stations
 - **Option B:** Optimize the location of the existing 4 fire stations and add a 5th station.
 - Impact: Projected improvement to current service delivery performance. Higher costs associated with land acquisition and ongoing personnel costs. Significant improvement to current deployment model. Rehabilitation costs absorbed through new construction.
 - % Demand within 4-minute Travel: 86.5%
 - Net Improvement: 16.7%



Summary of Decision Points and Options

- How many fire stations does the City of Concord plan to operate during the next 30-50 years?
- 5 Stations
 - **Option C:** Maintain or slightly relocate stations 1, 5, and 7. Relocate Station 4 near the area of Route 13 and Langley Parkway and plan for a future 5th station near the commercial area of Manchester Street and Interstate 93.
 - Impact: Reduced land acquisition costs for three stations, maintain current staffing levels while new location for Station 4 is built. Fifth station can be added with needed staffing in the future. Rehabilitation/reconstruction required at stations 1, 5, and 7.
 - % Demand within 4-minute Travel: 85.7%
 - Net Improvement: 15.9%



Recommendations



Recommendations

- All fire stations should be renovated or rebuilt due to physical and structural deficiencies.
- A suppression unit should be staffed at Central Station 1. The lack of a suppression unit capable of providing a fire water flow, equivalent for the building types contained within that district, at Central Station 1 allows for a substantial risk within the historic downtown area.
- An ambulance and its required staffing should be added at Central Station to ensure appropriate coverage for the downtown area and its residents. This unit will also provide needed overlapping coverage for all other districts within the City as it is centrally located.



Recommendations

- The Central Station, Administration, and Communications Center campus may be better suited in a new location. This campus contains several historic buildings that are retrofitted to meet the needs of the department. Space is limited for each division and future expansions or renovations are not possible without affecting the historic nature of many of these buildings. The location of Central Station 1, or somewhere nearby, provides the best option to Concord Fire Department for deployment and options for other locations nearby should be considered and evaluated.
- Administrative staffing should be increased. Administrative staffing for Concord Fire Department is approximately one third the staffing levels that would ordinarily be anticipated. When this occurs, communication issues are often cited as the number one challenge within the organization as administrators cannot fulfill tasks in a timely manner, if at all.



Questions?

Stuart McCutcheon
Mary-Ellen Harper

